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Redescription of *Mesopristes elongatus* (Guichenot, 1866), an Endemic Malagasy Fish Species (Pisces, Terapontidae)

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ABSTRACT

Mesopristes elongatus (Guichenot, 1866) is redescribed for the first time on the basis of a series of specimens. *Datnia obtusirostris* Guichenot (1866) and *Therapon lambertoni* Fowler (1923) are considered synonyms of *Mesopristes elongatus. Mesopristes elongatus* is limited to the rivers of the eastern versant of Madagascar.

INTRODUCTION

In his revision of the Indo-West Pacific fish family Terapontidae, Vari (1978) was limited to proposing a tentative synonymy for the species of *Mesopristes* endemic to the fresh waters of Madagascar. The holotype of only one of the three nominal Malagasy species was available for examination, and no nontype specimens were known. In intervening years the types of the other nominal species were returned to their depositories and other specimens were located in various museums. Most importantly, recent collecting efforts by Drs. Melanie L. J. Stiassny and Peter N. Reinthal of AMNH in Malagasy freshwaters yielded well-preserved specimens of the endemic *Mesopristes* species. It is thus appropriate to reevaluate the tentative conclusions of Vari (1978) and to redescribe the Malagasy endemic species based on a more extensive series of a considerably greater size range.

Specimens reported on in this paper are deposited in the Academy of Natural Sciences, Philadelphia (ANSP), American Museum of Natural History, New York (AMNH), Museum National d'Histoire Naturelle, Paris (MNHN), Naturhistorisches Museum Wien, Vienna (NMW), and National Museum of Natural History, Smithsonian Institution (USNM). Format of the species description follows those in Vari (1978).

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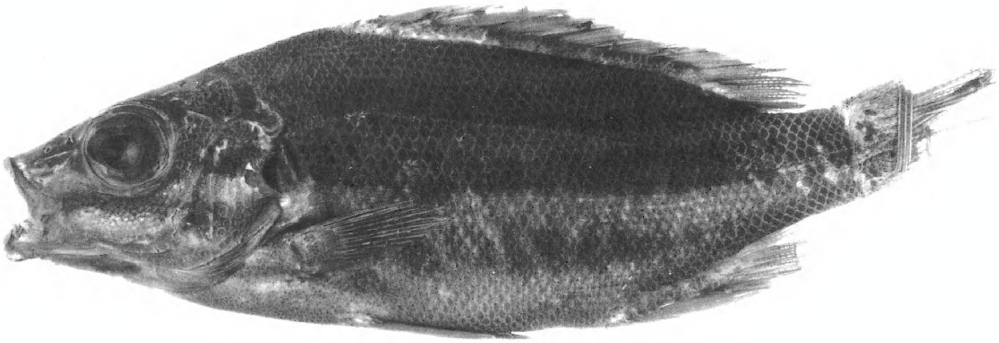

Fig. 1. *Mesopristes elongatus,* MNHN 4170, 54.2 mm SL; holotype of *Datnia elongata.*

SYSTEMATICS

Mesopristes Bleeker, 1845

Mesopristes Bleeker, 1873: 523 (type species *M. macracanthus* [= *Datnia argentea*] by monotypy).

DIAGNOSIS: Examination of all available specimens of *Mesopristes elongatus,* including adults, confirms that all members of the genus share the distinguishing features for *Mesopristes* tentatively proposed by Vari (1978): the marked differences in degree of curvature of dorsal and ventral profiles of head and body; the ontogenetic shift of the anterior portion of the head ventrally; the anteroventral orientation and straight form of the parasphenoid; and the pronounced development of the anal-fin spines relative to the condition in other terapontids.

Mesopristes elongatus (Guichenot, 1866)

Figures 1, 2

Datnia elongata Guichenot, 1866: 133 (original description, Madagascar).

Datnia obtusirostris Guichenot, 1866: 132 (original description, Madagascar). Vari, 1978: 276 (tentatively placed as a synonym of *Mesopristes elongatus*).

Therapon elongatus: Sauvage, 1891: 154, pl. 9, figs. 1, 1a (redescription based on holotype of *Datnia elongata*).

Therapon obtusirostris Sauvage, 1891: 155, pl. 48, fig. 5 (redescription based on holotype of *Datnia obtusirostris*).

Therapon lambertoni Fowler, 1923: 40 (original description, Tananarive, Madagascar). Vari, 1978: 276 (placed as a synonym of *Mesopristes elongatus*). Böhlke, 1984: 161 (depository of holotype).

Terapon argenteus: Fowler, 1931: 347 (in part, *Datnia obtusirostris* erroneously cited as synonym of *Datnia argentea* Cuvier, 1829).

Terapon lambertoni: Fowler, 1931: 350, fig. 28 (based on holotype of *Therapon lambertoni*).

Terapon elongatus: Fowler, 1931: 351 (based on account by Sauvage, 1891).

Therapon (Datnia) argenteus: Petit, 1937: 27 [not *Datnia argentea* (= *Mesopristes argenteus* Cuvier, 1829), misidentification, eastern versant of Madagascar, common name].

Therapon argenteus: Kiener, 1966: 1051, 1130 [not *Datnia argentea* (= *Mesopristes argenteus* Cuvier, 1829), misidentification, occurrence in fresh waters of Madagascar, no reported occurrence of Malagasy endemic form in estuarine and marine habitats].

Mesopristes elongatus: Vari, 1978: 276 (synonymy, redescription). Vari, 1986: 304 (synonymy). Reinthal and Stiassny, 1991: 2 (endemic to Madagascar).

DIAGNOSIS: A *Mesopristes* species distinguishable in having 9–12 scales in a transverse series to the sheath at the base of the dorsal fin [in contrast to 6–8 in *M. cancellatus* (Cuvier) and *M. argenteus* (Cuvier)] and 20–24 scales in a transverse series to the sheath at the base of the anal fin [in contrast to 18–19 in *M. kneri* (Bleeker), 15–21 in *M. cancellatus,* and 18–21 in *M. argenteus*]. The juvenile pigmentation pattern of a series of stripes on the body in *M. elongatus* further

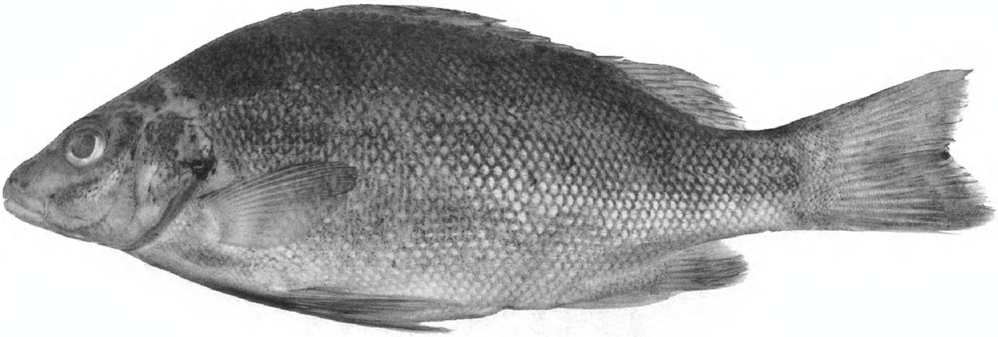

Fig. 2. *Mesopristes elongatus,* AMNH 59998, 180 mm SL; Madagascar, Province of Tamatave, Nosivlo River, Tributary of Mangoro River.

separates that species from *M. kneri,* which has several series of longitudinally arranged spots, and from *M. cancellatus,* which has a combination of vertical bars and horizontal stripes. Although juveniles of both *M. elongatus* and *M. argenteus* have a pattern of longitudinal stripes on the head and body, those of *M. elongatus* are wider, with less discrete borders than in *M. argenteus. Mesopristes elongatus* also lacks the discrete narrow, dark stripes on the dorsal and dorsolateral surface of the head characteristic of *M. argenteus.* The pattern of mottled dark and light pigmentation on the dorsal surface of the head in larger individuals of *M. elongatus* is unique to that species in the genus.

DESCRIPTION: Dorsal-fin spines XII; dorsal-fin rays 10; anal-fin spines III; anal-fin rays 8; pectoral-fin rays 13 or 14 [erroneously cited as 18 in holotype of *Datnia elongata* by Guichenot (1866)]; pelvic-fin I-5; 48–52 lateral-line scales to hypural joint; 5–10 pored scales on caudal beyond hypural joint, number increasing with body size; sheet of smaller scales extending across caudal-fin rays; proportion of fin covered by scales increasing with body size, approximately three-quarters of fin covered in largest specimens; 9–12 scales above lateral line to sheath at base of dorsal fin; 20–24 scales below lateral line to sheath at base of anal fin; 14–16 predorsal scales to occiput; 2 rows of scales in sheath at base of dorsal fin, sheath extending across base of rayed portion of fin and to base of third to fifth dorsal-fin ray; scales limited to membranes of rays posteriorly; 3–4 rows of scales in sheath at base of anal fin, continuous sheath extending across base of spines and anterior rays to between fourth and fifth rays, posterior fin membranes with individual series of scales extending between rays in larger specimens; cheek scales in 4–6 rows; gill rakers on first arch 7–8 + 1 + 15–16; vertebrae 10 + 15.

Reaching 180 mm SL; depth 2.45–2.98 in SL; distance from dorsal-fin origin to snout 2.19–2.42 in SL; head length 2.81–3.03 in SL; length of base of dorsal fin 1.72–1.96 in SL; snout length 2.51–3.16 in HL, snout proportionally shorter in smaller specimens; eye width 3.28–4.17 in HL, eye proportionally larger in smaller specimens (see also comments on holotype of *Therapon lambertoni* under Remarks below); jaw length 3.23–3.48 in HL; length of longest dorsal-fin spine 1.79–2.08 in HL, fourth to sixth spines longest; length of longest dorsal-fin ray 1.8–2.5 in HL; length of longest anal-fin spine 1.87–2.2 in HL, second spine longest and most robust; length of longest anal-fin ray 1.55–1.86 in HL.

Body compressed laterally, more so in smaller individuals; moderately deep. Dorsal profile of body more pronounced than ventral. Dorsal profile of head slightly convex anteriorly, then nearly straight to rear of head. Dorsal profile of body straight or slightly convex from rear of supraoccipital spine to origin of dorsal fin. Ventral profile of head and body straight to slightly convex from tip of lower jaw to insertion of pelvic fins, straight from that point to anus. Jaws equal in length or upper slightly longer than lower, gape slightly oblique. Snout elongate. Maxillary reaching posteriorly to vertical line through or slightly posterior of posterior nostril. Teeth in each jaw in villiform bands, outer series enlarged. Nostrils of each side well separated. Preopercle serrate, serrations most pronounced along angle, posterior margin, and in smaller specimens; number of serrations increasing with body size. Lower opercular spine longer and stronger than upper; not extending beyond margin of opercular lobe. Posttemporal exposed; posterior edge serrate. Cleithrum exposed; serrate posteriorly; with scales over lateral surface. Supracleithrum exposed.

Margin of spinous dorsal fin arched, with robust spines; first spine short, fourth to sixth spines longest, those following decreasing gradually in length to penultimate, which is one-half to three-quarters length of ultimate spine. Longest dorsal-fin spine longer than longest dorsal-fin rays except in largest specimens examined in which they are subequal or longest ray slightly longer than longest spine. Posterior margin of rayed dorsal fin slightly convex to very slightly concave. Anal-fin spines robust; second longest nearly length of longest anal-fin ray in most specimens, somewhat shorter in largest examined specimens. Posterior margin of rayed portion of anal fin straight to slightly convex. Pectoral fin asymmetrically pointed; fifth ray longest. Pelvic fin pointed; first ray longest, tip somewhat filamentous, more so in smaller individuals, reaching to anus in all but the largest individual examined.

COLORATION: Smaller specimens up to approximately 100 mm SL with a series of moderately distinct to obscure stripes on head and body; stripes most distinct in smallest specimens examined. Head with distinct dark stripe from snout to anterior margin of orbit, stripe continues from rear of orbit to posterior margin of opercle above lower opercular spine. Second, narrower stripe on head extends horizontally under orbit to anterior portion of opercle. Dorsal surface of head somewhat mottled. Stripes on lateral surface of head not apparent in larger specimens examined, dorsal and lateral surface of head progressively covered with mottled pattern of dark spots separated by lighter areas. Body in smaller specimens with three longitudinal stripes. First, extending along base of dorsal fin; second, from posttemporal to rear of base of rayed portion of dorsal fin; third, continuous anteriorly with midlateral stripe on head, extends posteriorly along midlateral surface of body to middle of caudal-fin base. A somewhat irregular horizontal band from base of pectoral fin to ventral surface of caudal peduncle. Stripes less distinct in 93.7 mm SL specimen (MNHN 1932-8) than in 54.2 mm SL holotype of *Datnia elongata* (MNHN 4170).

Specimens larger than 100 mm SL lacking distinct stripes on head and body. Head and body in specimens retaining guanine on scales silvery to golden, with mottled light and dark pattern apparent on dorsal surface of head (see Fowler, 1931: fig. 28). Specimens lacking guanine on scales with ground coloration tan to gray, mottled pigmentation pattern on head very obvious, particularly in largest individuals where it extends over lateral and dorsal surfaces of head. Body in larger specimens somewhat mottled, dark dorsally, tan to nearly white ventrally. Membranes of spinous dorsal fin darker distally. Membranes of rayed dorsal fin hyaline to dusky, with some mottling. Membranes of anal fin dusky. Caudal fin dusky.

COMMON NAME: Vovoaka (Petit, 1937: 28).

DISTRIBUTION: Few of the available specimens have exact locality information, most were cited as being from "Madagascar." All specimens with more exact locality information were collected in the rivers of the eastern versant of Madagascar in the provinces of Tamatave and Fianarantsoa. Petit (1937: 38) reported this species [as *Therapon* (*Datnia*) *argenteus*] from the "rivière Ivohitra," a river I have been unable to locate, but which he noted as being between the central Plateau and the east coast of Madagascar. Fowler (1923: 41) cited the type locality of *Therapon lambertoni* as Tananarive (= Antananarivo), the capital city. In his introductory remarks, Fowler (1923: 36) indicated that

Tananarive was, however, the shipping location for the specimens. Many species cited from Madagascar in that paper are marine forms that do not enter fresh waters and it is obvious that many of the specimens Fowler reported on came from Malagasy localities distant from Tananarive.

ECOLOGY: As noted under Distribution above, *Mesopristes elongatus* is evidently limited to freshwater localities. Petit (1937: 27–29) in his discussion of this species [identified as *Therapon* (*Datnia*) *argenteus*] noted that it was limited to fresh water on Madagascar. Kiener (1966: 1051), in contrast, cited this species (listed as *Therapon argenteus*) as ranging from marine to freshwater habitats. He regarded it, however, as a rare species occurring in Malagasy rivers up to an altitude of 500 m (Kiener, 1966: 1130) and the one specimen collected by Kiener and examined in this study (MNHN 1966-1060) is from a freshwater habitat. Kiener's citation of the species from marine and estuarine habitats was evidently based on his misidentification of his material as *Mesopristes argenteus,* a species found in marine and estuarine localities in the Philippines and adjoining areas (Vari, 1978: 272).

REMARKS: Guichenot (1866) described *Datnia elongata* and *D. obtusirostris* on the basis of single specimens from Madagascar. He did not contrast those two nominal forms but did cite various features distinguishing them from other terapontids assigned at that period to *Datnia.* The pronounced differences in pigmentation between the holotypes of the two nominal forms reflect the ontogenetic changes in the species across the size range between the holotypes of *D. elongata* (54.2 mm SL) and of *D. obtusirostris* (163 mm SL). *Mesopristes* species have an ontogenetic shift ventrally in the axis of the anterior portion of the head, and an associated increased disparity in the degree of convexity of the dorsal and ventral profiles of the head and body. The differences in these features between the holotypes of *D. elongata* and *D. obtusirostris* reflect that ontogenetic shift. Finally, the evident difference in the number of pectoral-fin rays cited for the two nominal species by Guichenot is a consequence of the erroneous citation of 18 rather than 14 pectoral rays in the original description of *D. elongata.* Examination of a series of specimens intermediate in size between those of the types of the two nominal species demonstrates a continuum across all examined features. *Datnia obtusirostris* is consequently placed herein as a synonym of *D. elongata.*

Fowler (1923) described *Therapon lambertoni* on the basis of a single 115 mm SL specimen from Madagascar (see comments under Distribution above with respect to reported type locality). Fowler (1923: 41) noted that *Therapon lambertoni* "approaches *Therapon elongatus* (Guichenot) as described and figured by Sauvage. The type, which Sauvage redescribes, is said to be but 67 mm. long. It differs from my example in that its caudal is shown as truncate, the fourth dorsal spine longest and two dark, longitudinal, lateral bands on trunk." The differences in pigmentation noted by Fowler are a consequence of the previously discussed ontogenetic changes in that feature in the species. Comparisons of the holotypes of the two nominal species do not reveal differences in the relative lengths of the various dorsal-fin spines between the specimens. Damage to the caudal fin in the holotype of *Datnia elongata* makes it impossible to determine whether Sauvage's illustration (1891: pl. 9, fig. 1) accurately represented the form of the fin. Even if the caudal was truncate in the holotype of *D. elongata,* that fin becomes progressively more emarginate ontogenetically in other *Mesopristes* species, and the difference noted by Fowler presumably represents the difference in body size between holotypes of the two nominal species. Only one feature was found that differs somewhat in the holotype of *Therapon lambertoni* in contrast to the limited sample of specimens of *Mesopristes elongatus* of comparable size. The diameter of the eye in the 115 mm SL holotype of *Therapon lambertoni* goes 3.3 times in HL in contrast to 3.5 and 3.9 times in 93.7 and 123.3 mm SL specimens, respectively. This lower value may reflect the damaged, somewhat foreshortened snout in the holotype of *T. lambertoni.* The lower value in that type specimen nonetheless falls within the range for *Mesopristes elongatus* and, given the lack of discrete differences between *Therapon lambertoni* and the available sample of *Mesopristes elongatus,* Fowler's species is placed into synonymy.

BIOGEOGRAPHY: The absence of a species-level phylogeny within *Mesopristes* precludes a more definitive biogeographic statement beyond the generalized observations in Vari (1978). Results of this study, in particular the confirmation of the features indicative of the monophyly of *Mesopristes* and the discovery that all specimens of *M. elongatus* with exact locality data originated in fresh waters, highlights the unusual nature of the distribution of this genus. *Mesopristes* has a highly disjunct distribution with one species in the fresh waters of Madagascar (*M. elongatus*), and three species (*M. cancellatus, M. argenteus,* and *M. kneri*) in the Philippines, New Guinea, Fiji, and adjoining regions. This distribution parallels that of some of the other taxa listed by Reinthal and Stiassny (1991: table 1) and may be part of a more extensive historical pattern between Madagascar and the Australasian–west Pacific regions.

SPECIMENS EXAMINED

MADAGASCAR: **No specific locality,** MNHN 4170, 1, 54.2 mm SL (holotype of *Datnia elongata*); MNHN 2113, 1, 163 mm SL (holotype of *Datnia obtusirostris*); NMW 35316, 1, 156.0 mm SL; MNHN 1907-137, 1, 167 mm SL; MNHN 1962-200, 1, 123 mm SL. **Province of Fianarantsoa,** fleuve Faraony, MNHN 1932-8, 1, 93.7 mm SL. **Province of Tamatave,** Nosivlo River, Tributary of Mangoro River below Ampasimaniona Village, 26 km E-NE Maralambo (approx. 19°59′S, 48°15′E), AMNH 59999, 1, 149 mm SL. Nosivlo River, Tributary of Mangoro River, AMNH 59998, 1, 180 mm SL; Ifasina River, near Bedary Village, "s/p de" Brickaville (= Ampasimanolotra, approx. 18°49′S, 49°04′E) along road from Tananarive (= Antananarivo) to Tamatave (= Toamasina), MNHN 1966-1020, 1 (not measurable). "Tananarive" (see also comments under Distribution above), ANSP 51096, 1, 115 mm SL (holotype of *Therapon lambertoni*).

COMPARATIVE SPECIMENS EXAMINED

Mesopristes argenteus. **Philippines,** Malaga River, USNM 184819, 2; Luzon, Legaspi, Yaua River, USNM 184820, 1; Luzon, Manila Bay, Pucot River, USNM 184821, 1; Uki River, USNM 184869, 3.

Mesopristes cancellatus. **Philippines,** Manila Bay, Pucot River, USNM 184778, 1; Basilani, Isabela River, USNM 184780, 1; Mindanao, Camp Overton, Nonucan River, USNM 184776, 4.

Mesopristes kneri. **Fiji Island,** Suva, USNM 112737, 1; Viti Levu, Naikorokoro Creek, about 1 km W of Monford Boys Town, USNM 257173, 25; Viti Levu, Naqara Island, mud flat N of island, USNM 257174, 1.

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